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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,562	10/24/2003	Lelia Cosimbescu	87196AEK	9164

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EXAMINER	
GARRETT, DAWN L	

ART UNIT	PAPER NUMBER
1774	

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/692,562	COSIMBESCU ET AL.	
	Examiner	Art Unit	
	Dawn Garrett	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/24/03;4/12/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 9, 11 and 14 are objected to because of the following informalities: It is suggested that "and" preceeding "alkyl" be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 8 is unclear because the claim recites "wherein all of the phenyl rings are unsubstituted"; however, claim 3, upon which claim 8 depends, requires at least one of the phenyl rings of the biphenyl has ring fused thereto. This fused ring is considered to be a substituent, which is contradictory to the claim 8 limitation of no substitution. Furthermore, it is unclear if the phenyl rings recited in claim 8 refer only to the bi-phenyl group or if the ortho-/meta- substituted phenyl is also included in this limitation. Clarification and/or correction are required.

5. Claim 18 is unclear because it recites "wherein there is also present in the light emitting layer a light emitting compound". Since claim 1 already sets forth "a light emitting dopant", it is unclear if the "light emitting compound" of claim 18 is either the host or dopant of the light emitting layer set forth in claim 1 or if a <u>further</u> light emitting compound is intended to be claimed. Clarification and/or correction are required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3, 7, 9, 13-15, 18, 20, 22, 24 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Fukuoka et al. (US 6,713,192). Fukuoka et al. discloses organic electroluminescence devices comprising a mixed organic light emitting medium comprising at least (A) one electron transporting material and (B) an anthracene derivative (see abstract). The mixed region reads upon the instant "light emitting layer containing a light emitting dopant and a host". The amount of component (A) to component (B) is 1:9 to 9:1 (see col. 38, lines 10-14). Specifically shown anthracene derivative EM3 (see col. 11) reads upon the instant compound. A phenyl group is attached to the anthracene at the 10 position that is meta-substituted with another phenyl group (per instant claims 13-15). A further anthracene group with a phenyl group attached is on the main anthracene group at the 9 position. The further anthracene group's middle ring) bonded to the main anthracene group reads upon a biphenyl that is further substituted per instant claim 3 and EM3 is considered to be 4-biphenyl per instant claim 7 (see col. 11). Per instant claim 9, the biphenyl is substituted with an aryl group (see compound EM3). The mixed light emitting region further comprises a fluorescent compound per instant claim 18 (see col. 38, lines 14-19). Preferred fluorescent compounds include quinacridones and coumarins, which are well known as green emitting compounds per instant claim 20 (see col. 37,

lines 23-64). Per instant claim 22, component (A) may be deemed a co-host and fluorescent compound (C) may be deemed the dopant, since the amount of (A):(B) may be 50/50 (see col. 38, lines 10-14). The preferred electron transporting component is Alq per instant claims 24 and 25 (see Example 14, Table 1-1, col. 47).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 10-12, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka et al. (US 6,713,192). Fukuoka et al. is relied upon as set forth above. Fukuoka et al. fails to exemplify a compound comprising a phenyl at the 10 position that is an ortho-substituted phenyl; however, Fukuoka et al. does teach according to general formula (I-a) that the phenyl substituent (R1 or R2) may be located at any carbon position on the phenyl ring. Per instant claims 10-12, 16 and 17, R1-R6 may be an alkyl, alkoxy, aryloxy, or aryl group (see col. 3, lines 16-20). Per instant claim 16, Fukuoka et al. further teaches the R1-R6 may be the same or different and may form a ring by forming a bond between each other and also the aryl groups comprising R1-R6 may be substituted which encompasses a naphthyl group (see col. 3, lines 5-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed anthracene compounds according to instant claims 10-12, 16, and 17, because Fukuoka et al. teaches for general formula (I-a) that the R1 and R2 substituents may form at any

carbon position on the phenyl ring, substituents may bond with each other and teaches all required substituents.

10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka et al. (US 6,713,192) in view of Araki (US 6,413,658). Fukuoka et al. is relied upon as set forth above for the rejection of claims 1 and 20. Fukuoka et al. teaches a light emitting device comprising an anthracene compound and an electron transporting compound in mixture as a light emitting layer (see abstract). Fukuoka et al. teaches the electron transporting compound is not particularly limited as long as the compound has the electron transporting property (see col. 5, lines 52-54). While Fukuoka et al. sets forth some specific electron transporting materials, Fukuoka et al. fails to teach an electron transporting material (co-host) which is a polymer. Araki teaches in analogous art electron transporting materials that are polymers (see formula 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected an electron transporting polymer taught by Araki for the electron transporting material disposed in the Fukuoka light emitting layer, because Fukuoka teaches that any material may be used as the electron transporting material as long as the material has an electron transporting property.

11. Claims 1-19, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funahashi et al. (WO 2003/087023) (hereinafter WO '023). WO '023 teaches anthracene compounds that are asymmetric for use in an organic electroluminescent element. The anthracene compound may be used in a light emitting layer in mixture with another compound (see abstract). The anthracene compound is of the formula "A-Ar-B" (see page 3) wherein A is selected from the groups labeled (1) to (11) shown on page 4. Substituted phenyl groups are shown as numbers (1), (2) and (3). On the other side of the anthracene skeleton, B may be

selected from a 5-60 carbon aryl group, which encompasses a biphenyl group (see English abstract by Derwent for reference). The teaching to use the anthracene compound in combination with another compound in mixture in a layer reads upon the requirement of a dopant and a host per instant claim 1. Per instant claims 2-4, 8, and 9 an unsubstituted biphenyl group, a biphenyl with a ring fused thereto, and a substituted biphenyl fall with the category of a 5-60 carbon aryl group. Compound A-21 on page 33 further shows a compound with an unsubstituted biphenyl group. Compound A-18 on page 32 further shows a compound with a fused ring on the biphenyl group. Compound A-21 shows a 4-biphenyl; however, it would have been to one of ordinary skill in the art at the time of the invention to have formed any one of biphenyl groups attached at the 2, 3, or 4 position, because WO '023 generally teaches aryl groups of 5-60 carbons for the "B" group of general formula A-Ar-B and any of the bi-phenyls recited in claims 5-7 fall within this category [see all compounds pg. 31-36]. Per instant claims 10-17, WO '023 shows the substituted phenyl groups (1)-(3) may be substituted at any of the carbon positions on the phenyl ring. Furthermore, the phenyl groups are substituted with aryl groups (see page 4). Although WO '023 fails to *exemplify* a compound with an "A" group comprising an ortho- or meta- substituted phenyl group with a "B" group comprising specifically a bi-phenyl group, it would have been obvious to one of ordinary skill in the art to have formed compounds according to these claims, because WO '023 generally teaches "A" and "B" groups for bonding to an anthracene skeleton that read upon the instant compounds. WO '023 teaches a light emitting compound and teaches the element emits blue light per instant claims 18 and 19. Per instant claims 26 and 27, the electroluminescence element is taught as a light source for electronic instruments (see title).

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Funahashi et al. (WO 2003/087023) in view of Wolk et al. (US 2002/0160296). Funahashi et al. is relied upon as set forth above for the teaching of a blue light emitting device comprising an anthracene derivative. Funahashi et al. fail to teach an element with white light emission for an electronic display. Wolk et al. teach in analogous art patterning red, blue and green light emitting layers in an element to achieve the emission of white light (see par. 35). It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a light emitting element emitting white light by using the blue emitting layer of Funahashi et al. as the blue emitting part and further adding other colored light emitting layers, because Wolk et al. teaches the combination of light emitting layers, including a blue layer, produces white light if desired.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hatwar 2004/0058193 discloses at par. 143 that coumarin and quinacridone compounds emit green light. JP 2003-306454 is cited as a patent family equivalent of WO 2003/087023.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is 571-272-1523. The examiner can normally be reached Monday through Friday during normal business hours. Please allow the examiner twenty-four hours to return your call.

If reasonable attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached at 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dawn Garrett

DAWN GARRETT
PRIMARY EXAMINER
ART UNIT 1774

D.G.
August 5, 2004